STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 28 July 1958

FROM : [redacted]

25X1

SUBJECT: Notes on TA-1A

1. The present TA-1A design is complete except for winding the final coil on higher frequency powdered iron.

2. Recently a requirement for a 3 - 30 mc TA-1 unit has been issued.

3. Various difficulties exist in designing a TA-1 above 16 mc. FT-243 crystals are recommended for use in the TA-1. This type crystal is better adapted to a single tube transmitter which is primarily a power oscillator requiring high drive and consequently causing high crystal currents. The FT-243 units are built to approximately 8 mc. The power output that may be obtained from a single tube transmitter is prohibitively low when operating on the 3rd harmonic of the crystal fundamental. CR-18 or CR-27 crystals are built to higher fundamental frequencies but will not function at the required drive and power output required of a single tube transmitter.

4. At 30 mc, the tube output capacitance and the reflected antenna capacitance influence the tuning range considerably. Means taken to swamp this change in capacity, lowers the impedance level facing the power output tube. A pi antenna coupling network may be required.

5. The above comments would suggest a transmitter consisting of a transistorized oscillator followed by a power amplifier and preferably the amplifier should include a tube of known output characteristics. This may eliminate the feature of using the receiver audio tube.

6. It is recommended that the projected 3 - 30 mc TA-1 be breadboarded around these ideas with the project carried under the development category aimed at prototypes.

7. It is also recommended that the present TA-1 range be extended to 16 mc (one coil) and this be accomplished when the final TA-1A coil is wound.